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ABSTRACT

This study examined the self-assessed health status of college freshmen at York University (Ontario, Canada), a large commuter university in metropolitan Toronto, through an end-of-year survey of 1,856 first-year students. Results were compared with responses of undergraduate students at six other Canadian universities and with findings from the 1991 Canadian Social Survey of the self-assessed health of the 18- to 24-year-old population in general. Results indicated that the self-assessed health of York first-year students was lower than that of Canadian undergraduates in general and lower than that of the general population in the 18- to 24-year age category. Possible reasons for this finding is that female students and those of Chinese origin tend to have lower self-evaluated health than other students, and that family, financial, and social stresses may also contribute to lower levels of self-assessed health. Among various first-year experiences, only involvement in sports and classroom involvement appeared to contribute to good self-assessed health. Tables and an appendix provide study details. (Contains 16 references.) (DB)

CENTRE FOR RESEARCH IN HIGHER EDUCATION

THE HEALTH OF FIRST YEAR STUDENTS

J. PAUL GRAYSON

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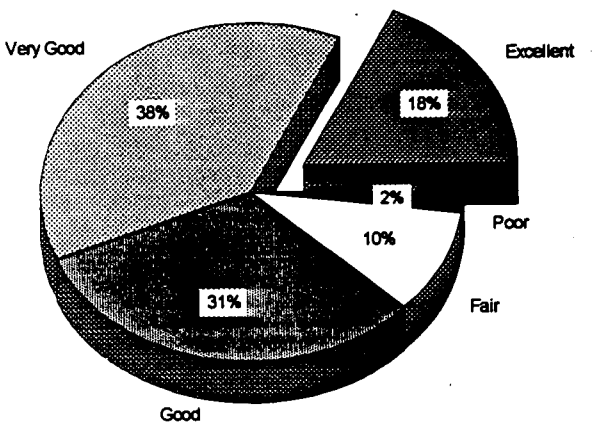
Summary

At York University, a large commuter university located on the suburban fringe of Metropolitan Toronto, the self-assessed health of first year students is lower than that of Canadian undergraduates in general and those in the 18 to 24 age category who are not enrolled in universities. While the reasons for these differences are difficult to pinpoint, on the basis of surveys conducted prior to the beginning of classes, and at the end of first year, it can be argued that female students and those of Chinese origin have lower self-evaluated health than other students. Moreover, students who enter university anticipating a stressful year (difficulties with making friends, having enough money, family interference with studies, and being able to handle stress) have lower self-assessed health at the end of the first year than others. Actual difficulties with making friends and handling stress contribute to even lower levels of self-assessed health. Among a number of possible first year experiences, only involvement in sports and classroom involvement contribute to good self-assessed health. Overall, the findings support the notions that stresses contribute to low assessments of health and integration into the institution makes a positive contribution to health.

Introduction

In 1994 students entering King's College the University of Western Ontario, the University of Toronto, Nipissing College, the University of Guelph, Laurentian University, the University of Western Ontario, and Brock University all filled out the same questionnaire, distributed by the Student Environment Group at the University of Guelph, in which they were asked, among other things, questions on their emotional and physical health. Of those responding to the surveys, 14% believed that they were in the top 10% in terms of emotional health and a further 36% believed they were above average. Forty three percent said they were average and the small remainder, 7%, believed that their emotional health was below average. When asked about their physical health, 13% and 34% said that they were in the highest 10%, and above average, respectively. Forty six percent thought they were average and only 7% below average. Fewer than 1% placed themselves in the lowest 10% in terms of physical health.[1]

Graph 1: Self-Assessed Health of First Year York Students



Compared to other people your age, how would you describe your health? Would you say it is...

While the above data suggest that in terms of both emotional and physical health the vast majority of students entering certain Canadian universities believe that they are above average, information on their health at the end of first year, and the impact of the first year on health, are unavailable. At York University, however, in an end of year survey of 1,856 first year students (response rate approximately 65%), compared to others their age, 18% described their health as excellent, 39% as very good, 31% as good, and 10% and 2% as fair and poor respectively (Graph 1).

What do these responses tell us about the health of first year students at York? How do the health assessments of York students compare to those of 18 to 24 year olds enrolled in other Canadian universities? How do they compare to the evaluations of young adults who are not attending universities? Do health assessments vary by gender, income, race, or age? More importantly, from the university's point of view, are there particular first year student experiences that

contribute to positive assessments of health? This article will focus on answering these and other questions by analysing the results of surveys carried out before the beginning of classes and at the end of first year.

Self-Assessed Health

To many, health is simply the absence of disease. The World Health Organization, however, goes one step further and defines health as, "physical, mental, and social well being and not merely the absence of disease or infirmity" (quoted in Larson, 1991:7). This more inclusive definition of health will guide the following analysis.

Social surveys frequently employ self-assessments in determining individuals' health. Justification for this approach can be found in research conducted in the United States, Canada, and in other countries. For example, in a nine year study conducted in California, "persons who in 1965 rated their health as poor rather than excellent had a nearly twofold increased risk of death over the period, even when the effects of other significant covariables were eliminated" (Kaplan and Camancho, 1983). The same study demonstrated that those who gave poor assessments of their health were likely to report low levels of happiness and high levels of depression, etc. In another study of Americans and West Germans it was found that individuals with the lowest levels of anxiety, depression, and psychological distress, in general, rated their health the highest of those in the sample (Cockerham, 1988:835). In a Canadian study it was discovered that "self-assessed health status is proven to be a valid indicator of health and to have a good predictive value for practices such as exercise and smoking, for which there is ample biological and clinical verification, such as sedentary life as a risk factor [sic] in cardiovascular disease and respiratory symptoms and conditions in smoking" (Segovia, 1989:36).

The General Social Survey, 1991

More important than these conclusions taken from previous research is an analysis of some findings from the Canadian General Social Survey of 1991. Using the survey it was possible to examine the self-assessed health of the 18 to 24 year old population and relate it to: number of days of activity loss in the last two weeks; number of consultations with medical doctors over the previous 12 months; whether or not the respondent reported any 'health' problem (high blood pressure, heart trouble, diabetes, arthritis, asthma, emphysema, hay fever, allergies, ulcer, digestive problem, migraine headache, high cholesterol, emotional disorders); and psychological well-being as measured by the Bradburn affect-balance scale (low = 0 and high = 20). The results of this analysis, as well as comparisons between young adults not in school, undergraduates in Canadian universities (all years), and York first year students, are summarized in Table 1.

The table shows that a greater percentage of undergraduates aged 18 to 24 in Canadian universities are likely to report their health as excellent (25%) or very good (52%) than individuals of the same age not in school (22% excellent, 40%

Table 1: Self-Assessed Health

	Canadian Population Not In School*	Canadian Population Undergraduate	York First Year**	Population 2 Week Activity Loss Days*** (Average)	Population 12 Month Consultations With Medical Doctors*** (Average)	Population With Any Health Problems***	Psychological Well-Being*** (Average)
Excellent	22%	25%	18%	0.05	2.74	45%	13.83
Very Good	40%	52%	39%	.16	3.30	53%	13.53
Good	29%	19%	31%	.28	4.24	56%	12.61
Fair	8%	4%	10%	.41	7.51	83%	11.27
Poor	1%	0%	2%	3.29	16.43	71%	14.14
Total %	100%	100%	100%				
Total Cases	756	139	1856	892	892	856	838
Mean	3.75	3.96	3.61	.21	3.84	54%	13.19
S.D.	.92	.78	.95	1.08	5.41	49%	2.97

*Chi-square sig. .0213 for differences between Canadian Population Not In School and Canadian Population Undergraduate
**F sig. for differences between York First Year and Canadian Population Not In School, and York First Year and Canadian Population Undergraduate
***F Sig. .0000

very good). Moreover, differences are statistically significant. When compared to undergraduates in general, first year students at York fare badly: only 18% and 39% respectively report excellent or very good health. Moreover, while the average self-assessed health score (1 = low, 5 = high) for those not in school and Canadian undergraduates is 3.75 and 3.96 respectively, for first year York students it is only 3.61. In short, first year York students assess their health less favourably than both the 18 to 24 year old population not in school and individuals of the same age enrolled in universities. Importantly, differences between York first year students and each of the other two groups are statistically significant.

Unfortunately, as we do not know if student health improves after first year, or if those with poor health leave the university, comparisons of York first year students with all university students must be treated with caution. Nonetheless, as the mean score for self-assessed health of Arts students in second year is 3.57 (for all first year students it was 3.61) we may conclude for the time being that student self-assessed health at York is lower than for the 18 to 24 year old Canadian population, both in and out of universities. The extent to which the level of health of first year York students can be attributed to experiences at York will be assessed later.

Information in Table 1 also indicates that among 18 to 24 year olds the higher the self-assessed health the fewer the activity loss days in the previous two weeks. For example, those with excellent health lost only .05 days, while those with poor health reported 3.29 days. Similarly, the better the health, the fewer the number of consultations with a medical doctor over the previous 12 months. For those with excellent health the number is 2.74; those with poor health report 16.43. When it comes to the reporting of any health problems, there is a slight deviation from the previous pattern. While the fewest health problems (45%) are reported by those with excellent health, individuals with fair (not poor) health (83%) report the most. Only 71% of individuals with poor health indicate health problems. There is an aberration for psychological well-being as well. Greatest well-being is reported not by those with excellent health, but by individuals with poor health (13.83 compared to 14.14)! Leaving off those with poor health, however, we can see that the better the self-assessed health, the higher the well-being.

The foregoing suggests that self-ratings of health reflect activity loss days and number of consultations with physicians. The fit for health problems and psychological well-being is not as close. Nonetheless, overall it seems fair to say that self-assessed good health may be taken as a reasonable indicator of other measures of good health, albeit in an imperfect way. Equally important is that individual assessments of good health themselves indicate a state of mind that is consistent with the definition of good health employed in this article.

Demographic Differences

The 1991 General Social Survey shows that within the Canadian population of 18 to 24 year olds, there are no statistically significant differences between the self-

assessed health of males and females (average scores of 3.82 and 3.75 respectively). Among first year students at York, however, male students score 3.78 and female students a lower 3.51. While the differences are small, they are statistically significant. (See Michalos, 1993, for a comparison of health satisfaction (not self-assessed health) of Canadian university students compared to those in other countries.)

In addition, while there are no differences in self-assessed health at York by income level and age of first year students, there are statistically significant differences in self-assessed health based on self-identified racial origins. In descending order, Black students average 3.72, students of European origin 3.68, students of 'other' races 3.49, those of East Indian origin 3.34, and students of Chinese origin 3.25.

While at this point it is difficult to explain why students of different race may have different levels of self-assessed health, previous research at York found that because of a cultural norm students of Chinese origin are reluctant to admit to being stressed; as a result, they report more psycho-somatic problems than others (Linn, 1991). This tendency may be reflected in their self-assessed health.

Stress and Health

While students of Chinese origin may be reluctant, for cultural reasons, to admit to stress, it is evident that the first year of university may have various associated stresses such as concern over making new friends, having sufficient money to meet expenses, being able to meet the expectations of family, and family demands interfering with studies (Grayson, 1995). While the link between stresses such as these and ill-health has been known for some time (Totman, 1979), the possible physiological processes responsible for this connection have only been discovered recently. Research now suggests that a hormone produced by stress attaches itself to immune cells thereby producing a hormone that facilitates the growth of viruses (Licinio and others, 1995).

In view of this possibility, in an examination of first year students, it is necessary to examine health in the context of potentially stress producing experiences and those that may have the effect of reducing stress. Moreover, attention must be paid to the temporal sequence of events and experiences that, via stress, may contribute to, or detract from, good health. For example, many students, for a variety of reasons (lack of money, feelings of incompetence, family pressure to achieve) enter university with high stress levels. For some this stress may be sustained over the first year (time pressure of courses, marks) and beyond. Conversely, some may enter university optimistically and only later, for various reasons, face stress. Still others may start first year with no stressors acting on them and may finish their year in the same way.

Analysis Plan

Because of the foregoing, the analysis of the health of first year students at York University utilized the results of two surveys. First, problems students anticipated at entry to university were determined in a survey of 1,789 students carried out before the beginning of classes in July and August of 1994. Approximately 1,013 of these students completed a second survey in February and March of 1995. Some students not surveyed in July - August were added to the March sample for a total sample size of 1,856. Pre-entry characteristics, classroom and university experiences, actual stressors and sources of support were obtained from the February - March survey. Ontario Academic Credit (OAC) and first year marks were obtained from administrative records.

The approach employed in the current analysis is similar to that used in a number of studies in which the objective is to assess the impact of university experiences on outcomes, such as intellectual development, with pre-entry characteristics held constant (see Pascarella and Terenzini, 1991 for a summary; see Grayson 1993a, 1993b, 1994a, 1994b, 1994c for research on York students from a similar perspective). To oversimplify somewhat, the general conclusion of research conducted from this point of view is that with pre-entry characteristics held constant, academic and social involvement of students, out-of-class contacts with faculty, and positive relations with other students, contribute substantially to desired outcomes of the university experience. At York, however, the nature of classroom experiences has been found to be particularly important in explaining first year outcomes. The explanation for this finding is that in a large commuter institution like York, where many students live at considerable distance from the university and may spend a great deal of time in transit, outside of the classroom, it is difficult to form various bonds, or engage in activities, that may serve the function of linking students to the institution.

Consistent with this model, in an examination of the impacts of the college/university experience in the United States, Astin (1993:131-32) found that when pre-entry characteristics were held constant, institutional characteristics had no impact on physical health of students; however, participation in sports or exercises correlated positively with physical health. A number of measures of involvement, such as socializing with friends, involvement in group projects, socializing, attending religious services, and participating in sports or exercise, contributed to emotional health.

In keeping with the general orientation of studies referenced above, the overall intent of this analysis is to separate experiences within the university that may contribute to good health (such as various aspects of academic and social involvement and positive classroom experiences) from demographic characteristics, and OAC marks, that might contribute to positive evaluations of health. (It is assumed that those entering with high marks likely face the coming year with less foreboding than others.) In addition, the analysis was carried out in such a way that the possible effect of events and/or experiences early in the year that might affect health (such as initial concern over having enough money to meet expenses) were analysed before those occurring later in the year (like actually not having enough money as the year wore on). It was assumed that students who could identify a professor or student to whom they could rely on for support would be shielded somewhat from stressors and/or negative university experiences. Finally, first year marks were analysed in view of the expectation that students with high academic achievement levels might be spared at least one of the

Box 1: Variables in Analysis

Pre-Entry Characteristics (February - March survey)

- gender
- age
- family income
- racial origins (Black, East Indian, Chinese, 'Other', European)

Previous Achievement (Administrative records)

- OAC marks

Potential Stressors: Problems Anticipated at Entry (July - August survey)

- making friends
- having enough money for expenses
- meeting family expectations
- inability handle stress
- family interference with studies

Classroom Experiences (February - March survey)

- satisfaction instruction
- topics relevant career success
- variety perspectives in class

University Experiences (February - March survey)

- number out-of-class faculty, teaching assistant, and staff contacts over previous two months
- academic activity involvement - number out-of-class academic activities over previous two months
- club involvement - number club memberships
- cultural activity involvement - number cultural activities since start of classes
- hours on campus per week
- number times utilized university services since start of classes
- classroom involvement - lecture and seminar/lab/studio attendance per week; number times month use library
- sports involvement - number sports activities participate in or watch
- social involvement - number new friends, time per week with new friends, monthly visits to campus pubs

Stressors: Actual Problems (February - March survey)

- making friends
- having enough money for expenses
- meeting family expectations
- inability handle stress
- family interference with studies

Sources of Support (February - March survey)

- at least one professor can turn to
- at least one student can turn to

Current Achievement (Administrative Records)

- GPA

potential stresses encountered by others. The matters of concern, and the order in which they were analysed in a step-wise regression procedure, are outlined in Box 1.

The actual questions used to determine the variables listed in the box can be obtained from the author. Means, standard deviations, and ranges can be found in Appendix A.

Analysis

Readers unfamiliar with step-wise multiple regression should be aware of the fact that this technique selects from all of the variables chosen for analysis those that make a statistically significant contribution to an understanding of the phenomenon under study (in this case, health). Moreover, the technique allows the researcher to examine variables in a specified order. In the current analysis the potential impact of demographic variables is assessed first, followed by OAC marks, and so on, as outlined in the previous section. By proceeding in this fashion the researcher can determine the incremental explanatory power (change in explained variance) of adding variables to the analysis. When the variable selection process is completed, for any one variable, all other selected variables are held constant.

Table 2 summarizes the results of the regression analysis of health. The first point to note is that only a few of the total number of variables under consideration were selected for the final regression equation. A second general point is that in total all of the variables selected in the analysis explain 12.1% of the variance in self-assessed health. (While regression coefficients (b) and standardized coefficients (beta) are reported, attention here will focus on the cumulative variance as determined from each step of the regression process).

Of variables selected for inclusion, being of Chinese origin has a negative impact on self-assessed health and explains 1.8% of the total variance. Being male has positive implications for health and explains an additional (3.3% - 1.8%) 1.5% of the variance.

Prior to the start of classes, students' concerns that they might have problems making new friends, that their families might interfere with their studies, that they might have difficulty in handling stress, and that they might have financial difficulties, all have negative implications for health measured six months later. Taken collectively, these four variables explain (8.1% - 3.3%) 4.8% of the total variance. These figures suggest that the stress associated with such concerns has a wearing effect on health.

Table 2: Impacts on Health

	b	Beta	Cumulative Explained Variance
Chinese	-.33	-.10	1.8%
Gender (male = 1)	.09	.04	3.3%
Anticipated problem making friends, July - August	-.07	-.09	6.3%
Anticipated problem handling stress, July - August	-.04	-.06	7.4%
Anticipated problem family interference, July - August	-.03	-.04	7.9%
Anticipated problem having enough money, July - August	-.03	-.04	8.1%
Sports involvement	.11	.09	9.1%
Classroom involvement	.14	.09	10.0%
Actually having problem handling stress, February - March	-.10	-.13	11.5%
Actually having problem making friends, February - March	-.07	-.09	12.1%
Number of cases with listwise deletion = 969			

The only experiences within the university that make a positive contribution to health are sports and classroom involvement. The former, an example of social involvement in studies cited earlier, includes participation in sports and/or exercise and watching sports events. The latter, an example of academic involvement, includes the percentage of lectures and tutorials etc., attended and the number of monthly visits to the library. Taken together, these variables explain (10.0% - 8.1%) 1.9% of the variance.

Actually having difficulty handling stress, and having had problems in making new friends, have negative impacts on health. Together these variables explain an additional 2.1% of total variance.

Overall, the data suggest that female students and those of Chinese origin have worse health than others. In addition, entering York with certain concerns regarding a number of potential problems related to the first year may have long term negative implications for health. On the plus side, actively or passively engaging in sports events and participating fully in class related activities (thereby becoming more integrated into the institution) may make a positive contribution to health. (While only healthy students may be attracted to sports, given that the majority of students engage in neither sports nor exercise activities, we cannot assume that non-participation is an index of poor health.) Sustaining difficulties in making friends and having difficulty in handling the on-going stress of university life detract from health.

At a more general level, it can be argued that among other things the data show that the failure to form bonds within the university contributes negatively and bonding positively, to health. This statement can be backed up by reference to the facts that students who have initial concerns with their likelihood of making friends, and those who actually have difficulty making friends, have poorer health than others. The converse is that students who have no such initial concerns and students who make friends have comparatively good health. In addition, students who through sports activities or through classroom/library participation develop links with the university enjoy relatively good health. This said, it must be emphasized again that all of the variables included in the analysis explain a small amount of total variance.

Before concluding it is worth noting that neither OAC nor first year marks affect health. This finding was somewhat of a surprise as it was initially assumed that high scores particularly on the latter would reduce some of the stresses associated with university life and thereby contribute to good health. It was also unexpected that most of the variables included in the university experiences category and both variables in the social support group had no impact on health.

Conclusions and Implications

This article began by asking a number of questions. How do the health assessments of York students compare to those of 18 to 24 year olds enrolled in other Canadian universities? How do they compare to the evaluations of young adults who are not attending universities? Do health assessments vary by gender, income, race, or age? More importantly, from the university's point of view, are there particular first year student experiences that contribute to positive assessments of health?

In answer to the first two questions it is clear that on average, at the end of first year, students at York University have lower self-assessed health than Canadians in the same age group independent of whether or not they are enrolled in a university. (It must be remembered that the comparison group of university students is not restricted to those in first year in Canadian universities - it includes all undergraduates.) At this point it is not possible to explain this difference.

In answer to the third question, it is clear that at York female first year students have lower self-assessed health than their male peers. (In the same age group in the Canadian population there were no significant differences based on gender). In addition, there is some variation in racial origin and health: Black students report the best health; students of Chinese origin the worst. By way of comparison, there are no differences in health based on age or family income.

With regard to the final question, it seems as though only two types of university experiences, sports and classroom involvement, as a minimum, *sustain* positive evaluations of health (we do not know if healthy students self-select sports events and/or classroom involvement). Academic achievement has no effect on health perceptions. By way of contrast, the health of students who entered first year with a number of concerns regarding making friends, money, family interference, and handling stress, had worse assessments of health than others. The health of those who also actually experienced difficulty in making friends and in handling stress was worse still.

It is unknown whether or not the factors affecting the health of first year students at York university would be operative elsewhere. In all likelihood in other commuter universities, with similar ethnic mixes and similar educational backgrounds on the part of parents, comparable forces would be at work. For the time being, however, this assertion must be treated as a hypothesis.

Clearly, the university has little control over certain aspects of students' lives that may contribute to relatively poor health at the end of first year. For example, it cannot completely solve problems of inadequate financing or of family interference. It could, however, make materials available to parents that would help them understand the demands of university life (this would be particularly important for parents who did not attend university). Similarly, through the ways in which classes and courses are structured, the university could assist in the provision of an

environment in which students would be more likely than is currently the case to make friends with other students. Through the same and additional channels students could be better equipped to deal with the stresses generated by university life. Finally, although there is the problem of self-selection noted above, student health might be improved by finding ways to encourage participation in sports and exercise activities.

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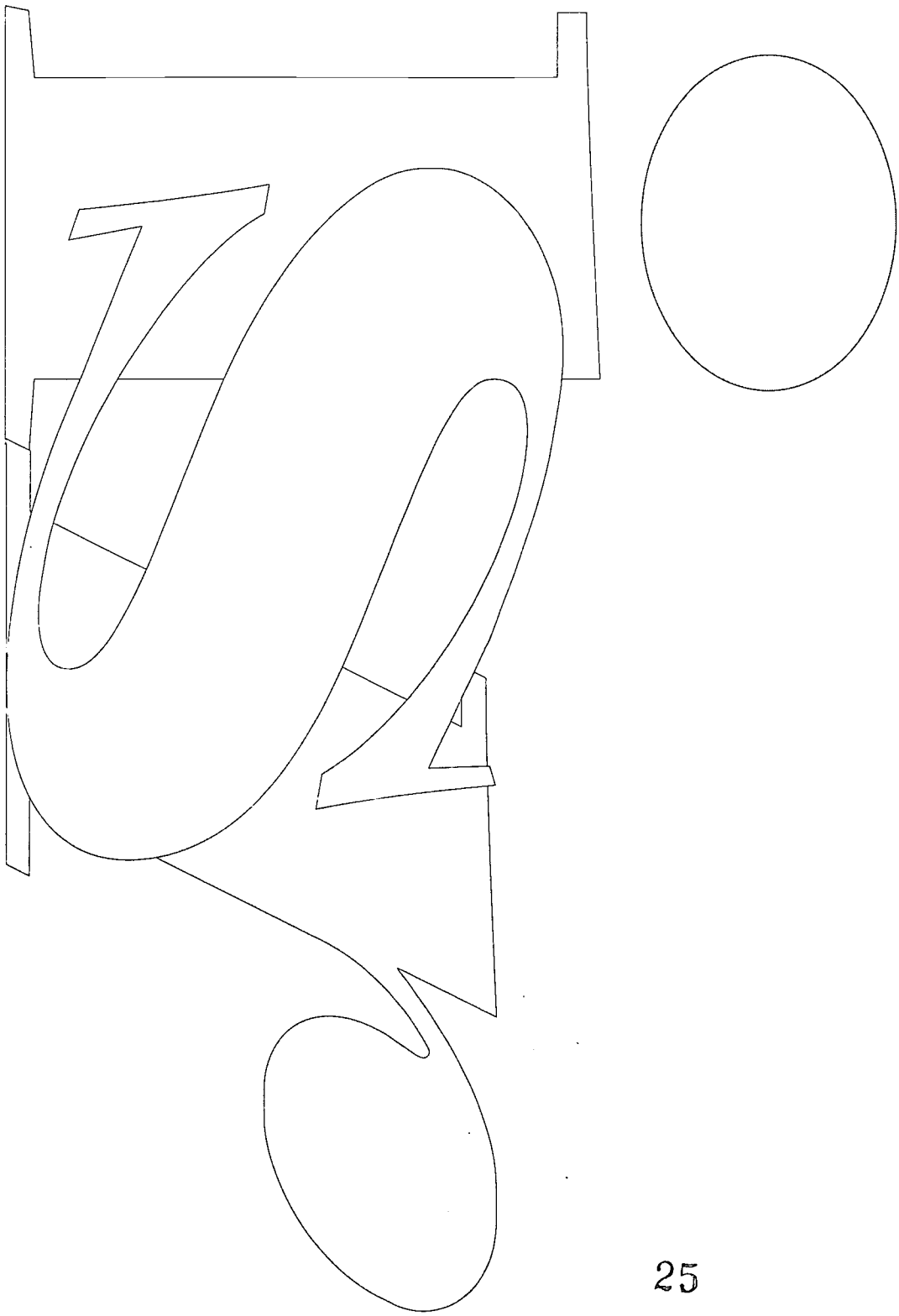
Notes

1. I am grateful to Brian Pettigrew at the University of Guelph for making these data available.

Appendix A: Means, Standard Deviations, and Ranges

Variable	Mean	Std Dev	Range	Note
Pre-Entry Characteristics				
Gender	.36	.48	1.00	
Age	20.72	2.80	64.00	
Family Income	2.86	1.67	8.00	
Black	.05	.22	1.00	Dummy variable
East Indian	.02	.15	1.00	Dummy variable
Chinese	.10	.29	1.00	Dummy variable
Other	.11	.31	1.00	Dummy variable
Previous Achievement				
OAC Marks	79.00	6.30	44.50	
Problems Anticipated at Entry				
Friends	2.48	1.23	4.00	
Money	3.50	1.36	4.00	
Family Expcts	2.96	1.29	4.00	
Stress	3.33	1.22	4.00	
Family Intefr	2.40	1.33	4.00	
Classroom Experiences				
Sat Instr	3.52	.87	4.00	
Topics Relvnt	2.95	.68	3.00	
Variety Pers	3.63	1.00	4.00	
University Experiences				
Contacts	-.04	.64	3.43	Average Z-score 3 items
Activity Inv	.00	1.00	2.95	Z-score
Club Inv	.00	1.00	4.58	Z-score
Cultural Inv	.00	.86	3.28	Average Z-score 2 items
Hours Campus	.00	1.00	4.40	Z-score
Service Use	.00	1.00	3.57	Z-score
Class Inv	.07	2.33	17.38	Average Z-score 3 items
Social Inv	-.01	.77	3.11	Average Z-score 3 items
Sport Inv	-.01	.76	4.33	Average Z-score 3 items
Actual Problems				
Friends	2.28	1.22	4.00	
Money	3.14	1.28	4.00	
Family Expcts	2.60	1.21	4.00	
Stress	2.99	1.16	4.00	
Family Intfr	2.68	1.35	4.00	
Sources of Support				
Professor	3.30	1.38	4.00	
Student	4.32	1.01	4.00	
Current Achievement				
GPA	5.30	1.77	8.90	
Self-Assessed Health				
Health	3.61	.95	4.00	



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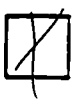

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